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09/510,053	02/22/2000	Mark Nixon	06005/35628A	7646
7590 02/25/2004 Marshall O'Toole Gerstein Murray & Borun 6300 Sears Tower 233 South Wacker Drive Chicago, IL 60606-6402			EXAMINER THANGAVELU, KANDASAMY	
			ART UNIT 2123	PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/510,053

Applicant(s)

NIXON ET AL.

Examiner

Kandasamy Thangavelu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Response mailed on January 12, 2004. Claims 1, 2, 4-7, 12 and 17 were amended. Claims 1-21 of the application are pending. This office action is made non-final, in response to Request for Continued Examination.

Response to Arguments

2. Applicants' arguments filed on January 12, 2004 have been fully considered. Applicants' arguments, filed on January 12, 2004 under 35 U.S.C. §103 (a) are persuasive. The art rejections are based on previously referenced prior art and the Applicants' admissions in the specification.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Santoline et al. (SA)** (PCT WO 97/38362) in view of **Admitted prior art (AD)**, and further in view of **Brown et al. (BR)** (U.S. Patent 6, 377,859) and **Bowling (BO)** (PCT WO 97/45778).

5.1 SA teaches a stimulated simulator for a distributed process control system. Specifically, as per claim 1, SA teaches an apparatus adapted to be used with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules (Fig. 1, Item 21; Page 1, Lines 2-3; Page 1, Lines 9-13 and Page 6, Lines 10-12); the apparatus comprising:

a computer having a memory and a processing unit (Fig. 1, Item 21; Page 6, Lines 10-12).

SA does not expressly teach a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration application is capable of being executed on the user workstation to create control

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modules for execution by the distributed controller. **AD** teaches a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration application is capable of being executed on the user workstation to create control modules for execution by the distributed controller (Fig. 1, Items 34 and 25; Page 8 describing prior art Fig. 1, L23-26; Page 2, L14-17), as that enables users to create or change process control modules (Page 2, L15-16; Page 8 describing prior art Fig. 1, L25-26) and test the control modules used by the controller applications (Page 8 describing prior art Fig. 1, L22) using simulation applications on the personal computer (Page 8 describing prior art Fig. 1, L 15-16). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration application is capable of being executed on the user workstation to create control modules for execution by the distributed controller, as that would enable users to create or change process control modules and test the control modules used by the controller applications using simulation applications on the personal computer.

SA does not expressly teach that at least one of the control modules communicates with a further module in a device separated from the distributed controller to perform a control activity. **BR** teaches that at least one of the control modules communicates with a further module in a device separated from the distributed controller to perform a control activity (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-

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25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included at least one of the control modules communicating with a further module in a device separated from the distributed controller to perform a control activity, as that would allow devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified.

SA does not expressly teach a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer. **BO** teaches a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway.

SA teaches that the controller application is further adapted to be executed on the distributed controller to implement the one of the control modules during operation of the distributed process control system (Page 1, L9-13). **SA** does not expressly teach that the

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controller application is further adapted to communicate with the further module to perform the control activity. **BR** teaches that the controller application is further adapted to communicate with the further module to perform the control activity (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included the controller application further adapted to communicate with the further module to perform the control activity, as that would allow devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified.

SA does not expressly teach that the configuration application, when executed on the computer, is further adapted to create the one of the control modules capable of being used by the distributed controller within the distributed process control system. **AD** teaches that the configuration application, when executed on the computer, is further adapted to create the one of the control modules capable of being used by the distributed controller within the distributed process control system (Fig. 1, Items 34 and 25; Page 8 describing prior art Fig. 1, L23-26; Page 2, L14-17), as that enables users to create or change process control modules (Page 2, L15-16; Page 8 describing prior art Fig. 1, L25-26) and test the control modules used by the controller applications (Page 8 describing prior art Fig. 1, L22) using simulation applications on the personal computer (Page 8 describing prior art Fig. 1, L 15-16). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included the configuration application, when executed on the

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computer, is further adapted to create the one of the control modules capable of being used by the distributed controller within the distributed process control system, as that would enable users to create or change process control modules and test the control modules used by the controller applications using simulation applications on the personal computer.

SA does not expressly teach that the controller application is adapted to cause execution of the one of the control modules within the computer to simulate the operation of the one of the control modules to thereby simulate operation of the distributed process control system. **BO** teaches that the controller application is adapted to cause execution of the one of the control modules within the computer to simulate the operation of the one of the control modules to thereby simulate operation of the distributed process control system (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the controller application adapted to cause execution of the one of the control modules within the computer to simulate the operation of the one of the control modules to thereby simulate operation of the distributed process control system, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway.

SA does not expressly teach that the controller application is adapted to cause execution including communicating with the further module. **BR** teaches that the controller application is adapted to cause execution including communicating with the further module (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included the controller application being adapted to cause execution including communicating with the further module, as that would allow devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified.

5.2 As per Claim 2, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the configuration application is adapted to create a user interface for use in displaying information to a user, and further includes a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to use the user interface to display information pertaining to the one of the control modules to a user. **AD** teaches that the configuration application is adapted to create a user interface for use in displaying information to a user (Page 2, L17-19), and further includes a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 8 describing prior art Fig. 1, L23-26), wherein the viewing application is adapted to use the user interface to display information pertaining to the one of the control modules to a user (Page 2, L22-25 and L18-20), as that enables a user to

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change settings such as set points within the process control routine and display the data to a user (Page 2, L19-20); and enables changes to be made to the user interface and the user interfaces used by the viewing applications to be tested (Page 8 describing prior art Fig. 1, L22-26). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included the configuration application adapted to create a user interface for use in displaying information to a user, and further included a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application was adapted to use the user interface to display information pertaining to the one of the control modules to a user, as that would enable a user to change settings such as set points within the process control routine and display the data to a user and enable changes to be made to the user interface and the user interfaces used by the viewing applications to be tested.

5.3 As per Claim 3, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the apparatus further includes a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration database application is adapted to communicate with the controller application within the computer to manage a configuration database. **AD** teaches that the apparatus further includes a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 2, L29 to Page 3, L3; Page 4, L21-24), wherein the configuration database application is adapted to communicate with the controller application within the computer to manage a configuration

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database (Page 8 describing prior art Fig. 1, L12-14), as that would reduce the amount of hardware required by designing the system so that the configuration database application runs on the same PC as the control application and the viewing application (Page 4, L21-24). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included the apparatus further including a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration database application was adapted to communicate with the controller application within the computer to manage a configuration database, as that would reduce the amount of hardware required by designing the system so that the configuration database application runs on the same PC as the control application and the viewing application.

5.4 As per Claim 4, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the controller application includes an execution rate parameter specifying the rate of execution of the one of the control modules within the computer. **BO** teaches that the controller application includes an execution rate parameter specifying the rate of execution of the one of the control modules within the computer (abstract; Page 2, Para 2; Page 4, Para 2), as that facilitates running the control procedures of the plant at a rate faster or slower than real time and the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner using appropriate simulation models (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with

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the apparatus of **BO** that included the controller application including an execution rate parameter specifying the rate of execution of the one of the control modules within the computer, as that would facilitate running the control procedures of the plant at a rate faster or slower than real time and the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner using appropriate simulation models.

5.5 As per Claim 5, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 4. **SA** does not expressly teach that the execution rate parameter can be set to be greater than or less than a real time execution rate of the one of the control modules when the one of the control modules is executed within the distributed controller of the distributed process control system. **BO** teaches that the execution rate parameter can be set to be greater than or less than a real time execution rate of the one of the control modules when the one of the control modules is executed within the distributed controller of the distributed process control system (Page 2, Para 2), as that would allow the design, test and verification of control system strategies in a more comprehensive manner using appropriate simulation models (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the execution rate parameter to be set to be greater than or less than a real time execution rate of the one of the control modules when the one of the control modules was executed within the distributed controller of the distributed process control system, as that would allow the design, test and verification of control system strategies in a more comprehensive manner using appropriate simulation models.

5.6 As per Claim 6, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the configuration application is adapted to create a further control module capable of being executed within the distributed controller during operation of the distributed process control system. **AD** teaches that the configuration application is adapted to create a control module capable of being executed within the distributed controller during operation of the distributed process control system (Page 2, L14-17), as that enables users to create or change process control modules used in the dedicated distributed controller (Page 2, L15-16; Page 8 describing prior art Fig. 1, L25-26). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included the configuration application adapted to create a control module capable of being executed within the distributed controller during operation of the distributed process control system, as that would enable users to create or change process control modules used in the dedicated distributed controller.

SA does not expressly teach that that the configuration application is adapted to create a further control module capable of being executed within the distributed controller during operation of the distributed process control system. **BR** teaches that the distributed controller is adapted to use a further control module capable of being executed within the distributed controller during operation of the distributed process control system (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to

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modify the apparatus of **SA** and **AD** with the apparatus of **BR** that included configuration application adapted to create a further control module capable of being executed within the distributed controller, as that would allow users to create or change process control modules used in devices made by different manufacturers in the dedicated distributed controller.

5.7 As per Claim 7, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the configuration application is adapted to create the further module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system. **AD** teaches that the configuration application is adapted to create the control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system (Page 7 describing prior art Fig. 1, L29 to Page 8 describing prior art Fig. 1, L2), as that enables users to create or change process control modules used in the field devices (Page 7 describing prior art Fig. 1, L29 to Page 8 describing prior art Fig. 1, L2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included the configuration application adapted to create a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system, as that would enable users to create or change process control modules used in the field devices.

SA does not expressly teach that that the configuration application is adapted to create the further module capable of being executed within one of the field devices communicatively

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connected to the distributed controller during the operation of the distributed process control system. **BR** teaches that the distributed controller is adapted to use a further control module capable of being executed within the distributed controller during operation of the distributed process control system (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **AD** with the apparatus of **BR** that included configuration application adapted to create the further module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system, as that would allow users to create or change process control modules used in devices made by different manufacturers in the dedicated distributed controller.

5.8 As per Claim 8, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the computer to simulate the operation of the distributed process control system. **BO** teaches a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the computer to simulate the operation of the distributed process control system (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the

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industrial plant (Page 2, Para 2); design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway (Page 4, Para 3); and allows the actual device control software to operate at a rate slower or faster than real time and provides the capability to arbitrarily stop and start the controller software's operation (Page 4, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the computer to simulate the operation of the distributed process control system, as that would facilitate the design and test of a part or the overall control of the industrial plant; design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway; and would allow the actual device control software to operate at a rate slower or faster than real time and provide the capability to arbitrarily stop and start the controller software's operation.

5.9 As per Claim 9, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** teaches that the controller application is adapted to communicate with the field devices through an input/output device when the controller application is executed within the distributed controller (Page 1, L9-13; Page 3, Lines 27-33).

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5.10 As per Claim 10, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system. **BR** teaches that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (CL2, L1-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included the controller application capable of communicating with a further controller that was of a different type than the distributed controller of the distributed process control system, as that would allow devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified.

5.11 As per Claim 11, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 10. **SA** does not expressly teach a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the further controller. **AD** teaches a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 8 describing prior art Fig. 1, L23-26), wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the controller

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(Page 2, L22-25), as that enables the user interfaces used by the viewing applications to be tested (Page 8 describing prior art Fig. 1, L22-26); and enables a user to change settings such as set points within the process control routine and display the data to a user (Page 2, L19-20). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the controller, as that would enable the user interfaces used by the viewing applications to be tested and enable a user to change settings such as set points within the process control routine and display the data to a user.

SA does not expressly teach that the viewing application is adapted to use a user interface to display information sent from the further controller. **BR** teaches that the distributed controller is adapted to use a further control module capable of being executed within the distributed controller during operation of the distributed process control system (CL2, L1-25), as that allows devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **AD** with the apparatus of **BR** that included the viewing application is adapted to use a user interface to display information sent from the further controller, as that would allow the user interfaces used by the viewing applications to be tested

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and enable a user to change settings such as set points within the process control routine and display the data to a user, when further controller is used with the distributed control system.

5.12 As per Claims 12-18, these are rejected based on the same reasoning as Claims 1-5 and 7-8, supra. Claims 12-18 are method claims reciting the same limitations as Claims 1-5 and 7-8, as taught throughout by **SA**, **AD**, **BR** and **BO**.

5.13 As per Claim 19, **SA** teaches an apparatus adapted to be used in conjunction with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules (Fig. 1, Item 21; Page 1, Lines 2-3; Page 1, Lines 9-13 and Page 6, Lines 10-12); the apparatus comprising:

a computer having a memory and a processing unit and a display connected to the computer (Fig. 1, Item 21; Page 6, Lines 10-12); and

the controller application is adapted to be executed on the distributed controller to implement a control module during operation of the distributed process control system (Page 1, L9-13).

SA does not expressly teach a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer. **BO** teaches a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and

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verification of various control system strategies in a comprehensive manner without using the communication network or data highway (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner without using the communication network or data highway.

SA does not expressly teach that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system. **BR** teaches that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system (Col 2, Lines 14-25), as that allows devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included the controller application capable of communicating with a further controller that was of a different type than the distributed controller of the distributed process control system, as that would allow devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems.

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SA does not expressly teach a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the further controller. **AD** teaches a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 8 describing prior art Fig. 1, L23-26), wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the controller (Page 2, L22-25), as that enables the user interfaces used by the viewing applications to be tested (Page 8 describing prior art Fig. 1, L22-26); and enables a user to change settings such as set points within the process control routine and display the data to a user (Page 2, L19-20). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **AD** that included a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the controller, as that would enable the user interfaces used by the viewing applications to be tested and enable a user to change settings such as set points within the process control routine and display the data to a user.

SA does not expressly teach that the viewing application is adapted to use a user interface to display information sent from the further controller. **BR** teaches that the distributed controller is adapted to use a further control module capable of being executed within the distributed controller during operation of the distributed process control system (CL2, L1-25), as that allows

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devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **AD** with the apparatus of **BR** that included the viewing application is adapted to use a user interface to display information sent from the further controller, as that would allow the user interfaces used by the viewing applications to be tested and enable a user to change settings such as set points within the process control routine and display the data to a user, when further controller is used with the distributed control system.

5.14 As per Claim 20, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 19. **SA** does not expressly teach the apparatus further including an interface connected between the further controller and the controller application. **BR** teaches the apparatus further including an interface connected between the further controller and the controller application (Col 2, Lines 14-25), as that allows devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included the apparatus further including an interface connected between the further controller and the controller application, as that would allow devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process.

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5.15 As per Claim 21, **SA**, **AD**, **BR** and **BO** teach the apparatus of claim 20. **SA** does not expressly teach the apparatus wherein the interface is an OPC interface. **BR** teaches the apparatus wherein the interface is an OPC interface (Col 2, Lines 14-25), as that allows devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BR** that included the apparatus wherein the interface is an OPC interface, as that would allow devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process.

Arguments

6. As per the applicants' arguments, the applicants' attention is requested to the corresponding claim rejections. In addition, the following explanation is provided to further explain the examiner's position.

6.1 As per the applicants' argument that "neither Santoline nor Bowling discloses that it would be desirable or even possible to provide, on a single computer, a complete design and simulation system that creates modules to be executed on different devices within the process and that simulates the interaction of these modules on a single computer, as recited in claim 1 and 12", the examiner requests the applicants attention to Figure 1, Items 34 and 25 in the

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admitted prior art. The prior art suggests that the configuration application is stored in the PC and executed to enable changes to be made to the process control modules used in the distributed control system and to enable testing the control modules (Page 8 describing prior art Fig. 1, L23-26). The admitted prior art also states that some process control systems locate the process control application with other software such as viewing application and configuration database application in the same workstation, to reduce the amount of the hardware required (Page 4, L21-24). **BO** teaches that the device controller simulator is located on a system separate from the actual plant and comprises a plant model, a device controller simulator and a man-machine interface (Fig 2; Page 2, Para 3 to Page 4, Para 3). Therefore, it would be obvious to one of ordinary skill in the art to locate the device controller simulator (controller application and the simulation application), the configuration application, the viewing application and the configuration database application all in one PC so the required hardware can be reduced and various control modules can be created, simulated and tested on the same PC.

6.2 As per the applicants' argument that "Santoline fails to disclose a configuration application of any type which is capable of creating control modules for execution by one or more distributed controllers or other devices within a process; Bowling does not disclose a simulation system having a configuration application that creates modules to be executed on different devices within a process plant", the examiner has used the admitted prior art (Figure 1, Item 25) as reference.

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6.3 As per the applicants' argument that "Bowling does not disclose or suggest placing a configuration application in the same simulation computer as the controller application", the examiner has used admitted prior art as reference. Please see paragraph 6.1 above.

6.4 As per the applicants' argument that Bowling fails to disclose a simulation system that simulates the interoperation of different modules on different devices within a process plant; and Bowling does not disclose that it is desirable to simulate the operation of the actual modules created on a single computer within the process plant", the examiner has used Bowling to indicate that the device controller simulation model could be separate from the actual controller and could be hosted in separate PC. As shown in Fig. 1 of SA, the device controller simulators can be distributed on various distributed processing units. However, as suggested by the admitted prior art (AD), the controller simulators can all be located with the configuration application and viewing application on the same PC or workstation to reduce the hardware required for the simulation system, while at the same time providing the capability to change the control modules and user interfaces and test the modules. Please see Paragraph 6.1 above.

6.5 As per the applicants' argument that "configuration of control software includes not only how the software runs but also how different parts of the software communicate with each other; such a problem does not exist in the system of Bowling", the examiner has used the admitted prior art as reference. The HYSYS high fidelity simulation product uses simulation applications that communicate with the controller applications using the OPC or PI interface, which is well known (Page 3, L10-17). It would have been obvious to one of ordinary skill in the art to use the

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same communication interfaces for communication between the control modules and the simulator applications in the PC based simulation.

6.6 As per the applicants' argument that "Bowling uses a first man-machine interface through which a device controller can be monitored and/or controlled and a second MMI which can communicate with simulation unit; Bowling does not disclose a single MMI that can communicate with a controller application and display information from a further controller", the examiner requests the Applicants' attention to the admitted prior art, which states that some process control systems locate the control application on the same workstation with the viewing application and configuration database application (Page 4, L21-24). Therefore, such system will use the same MMI for monitoring and control of the controllers and for display of user information.

Conclusion

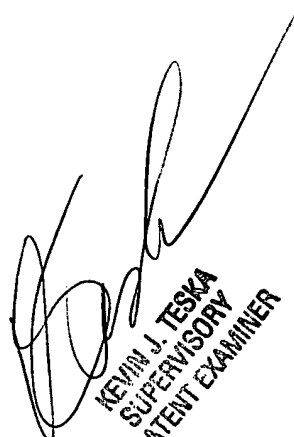
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
February 11, 2004



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER